# CASE OF INTRA-UTERINE FRACTURE OF THE TIBIA RESULTING IN CONGENITAL ANKLE DEFORMITY.

By ALBERT H. FREIBERG, M.D.,

OF CINCINNATI,

CURATOR TO THE CINCINNATI HOSPITAL; PATHOLOGIST TO THE JEWISH HOSPITAL; DISPENSARY SURGEON, MEDICAL COLLEGE OF OHIO.

I WISH to report the case of Willie S., aged seven months, the child of Irish-American parents. His family history, in view of his own deformity, is exceedingly interesting. His grandfather, as well as his father, lacked the middle finger of each hand. His sister is without middle finger and corresponding metacarpal of the right hand. I have elsewhere[1] reported her case with photograph. There is no history of congenital deformity in the family of the mother.

With exception of the deformity I shall describe Willie S. was an exceedingly well-developed, healthy-looking child. Excepting his right leg his bones were perfectly normal and no signs of rachitis were discoverable, here or elsewhere. The deformity was noticed at the birth of the child, and, according to the mother's statement, had changed but little since that time, having possibly grown slightly worse in degree. The mother has repeatedly assured me that during all the period of her gravidity she suffered no accident whatever; she received no blow of any kind against the abdomen nor was her pregnancy in any other way whatever abnormal. The labor itself was easy and in nowise remarkable.

At first glance the right foot appeared to me like a severe pes varus. The physician attending the mother at birth had called it an ordinary club-foot, and it was sent to me as such. A more careful examination, however, at once excluded the diagnosis of pes varus; it showed the tarsus and bones of the foot very slightly, or not at all, deformed. If the leg were grasped just above the malleoli it could be seen at once that, from the tibio-tarsal articulation down, the foot was almost normal in shape. Movement in the tibio-tarsal articulation was perfect and pronation of the foot extremely easy. On examining the foot from its plantar aspect, however, it could be noted that the middle line of the sole curved slightly inward, and, what is more important, that the right foot was about three-fourths inch shorter than the left. It was now evident that the principal deformity lay not in the tarsus or foot itself, but that it must be sought for in the lower ends of the tibia and fibula. A very thick panniculus prevented the examination of the leg from being easy, but there was no difficulty in outlining both external and internal malleolus with the finger. The diaphysis of the fibula could be outlined in its lower portion, though with some difficulty. The examination further made it evident that the joint surface of the tibia was slanted from below upward and inward. Both tibia and fibula, therefore, were bent inward just above the malleoli at about the epiphyseal line of the tibia. The astragalus was more prominent than normal on the outer side of the foot, and over it was visible a small dimple in the skin similar to those sometimes seen on the convexities of true club-feet. Nothing could be felt in the tibia or fibula to remind one of callus formation. The diagnosis of intra-uterine separation of the tibial epiphysis was made. In

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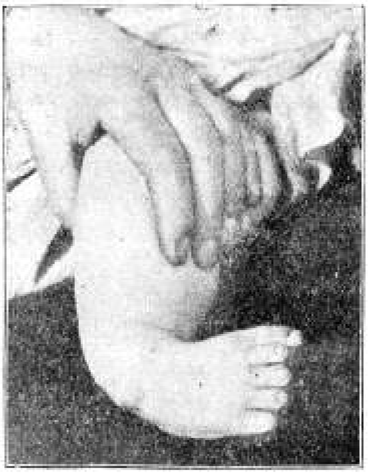
[1] Ohio Medical Journal, September, 1894.



Congenital deformity at ankle.

this way I accounted for both the deformity of the leg and the shortening of the foot.

While I could not hope to prevent increase of shortening in the foot and leg, I expected to bring the foot around in order that the child might learn to walk, and with this purpose I operated on April 19, 1894. An incision over the inner aspect of the tibia above the malleolus enabled me to reach the point of bending in this bone, and upon its being exposed a slight thickening of the bone could be felt. The tibia was here cut through with the chisel. At a point somewhat higher up I did cuneiform osteotomy of the fibula through a second incision. The foot could now be straightened easily although it remained in equinus position to a slight degree. An immobilizing dressing was applied. By April 28 the wounds had entirely healed, and on June 6 I made tenotomy of the tendo Achillis. On July 10 the child was able to bear his weight on the foot. The leg was about one inch shorter than the left. August 15 the child was brought to me walking quite well with a high shoe.

During the winter it became apparent to the mother that the foot was again turning inward, and by February, 1895, the deformity was almost as bad as in the beginning. I assumed that inasmuch as the osteotomy in the fibula was above the epiphyseal line, the growth of the fibula soon exceeded that of the tibia, and the foot was again turned inward. In May, 1895, the mother informed me that the child had died from meningitis after an illness of three days. I was unable to secure an autopsy.

This case seems to me interesting for several reasons. Were intra-uterine fractures in and of themselves not sufficiently infrequent to warrant a report of each case, I think the case under consideration would still claim some attention. It is estimated that about 50 per cent. of all reported intra-uterine fractures are fractures of the leg, and of 16 of the latter cases collected by Ithen,[1] up to 1885, only two were in the region of the lower epiphysis. Of 33 cases of various intra-uterine fractures collected by Gurlt[2] in his classical article on this subject only one could be regarded as an epiphyseal separation. With regard to its etiology our case is equally interesting. Ten of Ithen's 16 collected cases were due to trauma during pregnancy, while five of the remaining six cases are uninvestigated in this regard. In our case the intelligence of the mother compels me to discredit the possibility of her having received any trauma of importance during her gravidity. Neither is it possible, in my opinion, to ascribe the condition to any constitutional disease or to disease of the bones in general. The parents of the child as well as their other children are perfectly healthy save the deformities of sister, father, and grandfather before mentioned. I must confess myself entirely in the dark as to the mode of production' of this deformity.

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[1] Intrauterine Unterschenkel Brüche Einsiedeln, 1885.

[2] Lehre von den Knochenbrüchen, Berlin, 1862.

In the greater number of reported cases of intra-uterine fractures of the leg there has been incomplete development of the foot with absence of toes or even of metatarsals. In our case the foot is simply shortened, as is likewise the leg itself. Both of these are the usual conditions in intra-uterine fractures of the leg. In a considerable number of instances the fracture has been compound, shown either by a wound still unhealed at birth or by a cicatrix over the seat of fracture. I am unwilling to ascribe this meaning to the dimple on the outer side of my patient's foot, as it was neither in the right place nor was it a true cicatrix.

The character of the deformity, simulating, as it does, true club-foot, seems to me the most interesting feature of the case, and having ruled out pes varus there was still some difficulty in making the diagnosis. Volkmann was the first to describe a peculiar condition which he called "congenital dislocation of the ankle-joint."[1] This condition, which has since been given the more apt name of "Volkmann ankle deformity," consists of a congenital deformity of the lower ends of the tibia and fibula, causing the joint-line of the ankle to slant from below outward and upward, the normal being almost horizontal. In the cases of this deformity reported by Bidder, Burckhardt, Riedinger, Fahr, and others the foot has been normally developed. A case has also been reported by Burckhardt where the condition was said to be similar to those above mentioned, excepting that the joint-line ran from below upward and *inward* instead of outward, and our case corresponds somewhat with the description there given. The retarded growth of the foot in our case seems to me an important factor weighing against this condition, and favoring the diagnosis of intra-uterine fracture at the epiphyseal line of the tibia. Ithen[1] gives a careful analysis of the case of so called congenital luxation, reported by Fahr,[2] and shows this case to be far more likely an intra-uterine fracture of the lower end of the tibia. Save the defective development of the fibula in this case it bears much resemblance to our own, being simply an inverse form of the deformity. In our case the fibula was certainly normal at its lower end; this could be noted at the operation.

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[1] Hoffa Orthopädische Chirurgie, 1891, p. 623.

It is to be regretted that the early death of our patient prevented further observation. It will be noted in our case that ten months after the operation the deformity had recurred to almost its original extent. As I have said, I believe this was due to the difference in growth between fibula and tibia, and on this account I am inclined to think that it would have been unwise to attempt further correction of the deformity during the period of active growth. At the end of this time, osteotomy of the tibia and resection of a portion of the fibula might have been expected to permanently straighten the foot, and make possible walking with the aid of a very high shoe.

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[1] Loc. cit., p. 17.

[2] Congenit. Sprunggelenkluxat., Inaug. Dissert., Halle, 1884.